



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/657,054	09/05/2003	Michael D. Pleskach	7162-111	1846
39207	7590	07/08/2005	EXAMINER	
SACCO & ASSOCIATES, PA P.O. BOX 30999 PALM BEACH GARDENS, FL 33420-0999			KIM, PAUL D	
			ART UNIT	PAPER NUMBER
			3729	

DATE MAILED: 07/08/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/657,054

Applicant(s)

PLESKACH ET AL.

Examiner

Paul D. Kim

Art Unit

3729

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 April 2005.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-11 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-11 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 05 September 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>9/5/03, 4/19/04, 4/15/05, 5/20/05</u> | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

This office action is a response to the restriction requirement filed on 4/22/2005.

Response to the Restriction Requirement

1. Applicant's election of Species B, claims 1-11, in the reply filed on 4/22/2005 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).
2. The non-elect claims 30-33 have been cancelled.

Specification

3. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

The following title is suggested: --A METHOD FOR FORMING AN INDUCTOR--.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claim 1 is rejected under 35 U.S.C. 102(b) as being anticipated by Altman et al. (US PAT. 5,055,816).

Altman et al. teach a process of fabricating an electrical device such as an inductor comprising steps of: forming in a ceramic substrate (14) a first plurality of conductive vias (156,157,168) radially spaced a first distance from a central axis so as to define an inner circumference as shown in Fig. 5a; forming in the ceramic substrate a second plurality of conductive vias (163, 164,166, 167) radially spaced a second distance about the central axis so as to define an outer circumference as shown in Fig. 5a; forming a first plurality of conductive traces (162,165 as shown in Fig. 5a) disposed in a first plane (top surface) defined orthogonal to the central axis, the first plurality of conductive traces forming an electrical connection between substantially radially adjacent ones of the first and second plurality of conductive vias; forming a second plurality of conductive traces (159, 169 as shown in Fig. 5b) disposed in a second plane (bottom surface) spaced from the first plane and defined orthogonal to the central axis to define an electrical connection between circumferentially offset ones of the first and second plurality of conductive vias to define a three dimensional toroidal coil (see also col. 4,lines 9-45).

6. Claims 1-4 and 6 are rejected under 35 U.S.C. 102(b) as being anticipated by Grader et al. (US PAT. 5,479,695).

Grader et al. teach a process of making a monolithic magnetic component comprising steps of: forming in an ceramic substrate (1503 as shown in Fig. 15) a first plurality of conductive vias (1702, middle vias) radially spaced a first distance from a central axis so as to define an inner circumference as shown in Fig. 17; forming in the ceramic substrate a second plurality of conductive vias (1702, outside vias) radially

spaced a second distance about the central axis so as to define an outer circumference as shown in Fig. 17; forming a first plurality of conductive traces (1411 as shown in Fig. 14 or 1901 as shown in Fig. 19) disposed in a first plane (top plane) defined orthogonal to the central axis, the first plurality of conductive traces forming an electrical connection between substantially radially adjacent ones of the first and second plurality of conductive vias; forming a second plurality of conductive traces (bottom traces as shown in Fig. 14) disposed in a second plane (bottom plane) spaced from the first plane and defined orthogonal to the central axis to define an electrical connection between circumferentially offset ones of the first and second plurality of conductive vias to define a three dimensional toroidal coil as shown in Fig. 14 (see also col. 2, lines 3-31 and col. 8, line 24 to col. 9, line 40).

As per claim 2 the final structure is fired (col. 2, lines 27-31).

As per claims 3 and 4 at least a toroid shaped core region (such as magnetic tape layer, 1514) of the ceramic substrate, defined within the toroidal coil (as shown in Figs. 14 and 15), of a ceramic material having at least one electrical characteristic different from at least one other portion of said ceramic substrate such as permeability. Grader et al. teach that the monolithic magnetic component is made of first ceramic powder having high permeability for the toroid shaped core region (such as magnetic tape layer) a second ceramic powder having low permeability for the insulating and non-magnetic (col. 2, lines 6-9):

As per claim 6 the ceramic material is a low-temperature co-fired ceramic (LTCC) material.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 1 and 9-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Krone et al. (US PAT. 6,148,500).

Krone et al. teach a process of making an electronic inductive device comprising steps of: forming in an insulating substrate (12) a first plurality of conductive vias (40, inside) radially spaced a first distance from a central axis so as to define an inner circumference as shown in Fig. 11; forming in the ceramic substrate a second plurality of conductive vias (40, outside) radially spaced a second distance about the central axis so as to define an outer circumference as shown in Fig. 11; forming a first plurality of conductive traces (42 as shown in Fig. 12) disposed in a first plane (16, top plane) defined orthogonal to the central axis, the first plurality of conductive traces forming an electrical connection between substantially radially adjacent ones of the first and second plurality of conductive vias; forming a second plurality of conductive traces (43 as shown in Fig. 12) disposed in a second plane (16, bottom plane) spaced from the first plane and defined orthogonal to the central axis to define an electrical connection between circumferentially offset ones of the first and second plurality of conductive vias to define a three dimensional toroidal coil (see also col. 3, line 21 to col. 4, line 25).

Even though the insulating substrate of Krone et al. is not made of a ceramic material, in the manufacturing the inductive device or inductor, the insulating substrate such as made of ceramic material of the inductive device or inductor is used, which is well known in the art. Therefore, since the ceramic material of the substrate of the inductive device or inductor is old and well known and used for manufacturing the inductive device or inductor.

As per claim 9 Krone et al. also teach a process of forming a third plurality of conductive vias (48, inside vias as shown in Fig. 14) radially spaced a third distance from the central axis so as to define an second inner circumference, the third distance less than the first distance and forming in the ceramic substrate a fourth plurality of conductive vias (48, outside vias as shown in Fig. 14) radially spaced a fourth distance about the central axis so as to define a second outer circumference, the fourth distance larger than the second distance, forming a third plurality of conductive traces (50 as shown in Fig. 15) disposed in a third plane (top surface) defined orthogonal to the central axis, the third plurality of conductive traces forming an electrical connection between substantially radially adjacent ones of the third and fourth plurality of conductive vias, and forming a fourth plurality of conductive traces (52) disposed in a fourth plane (bottom surface) spaced from the first plane and defined orthogonal to the central axis to define an electrical connection between circumferentially offset ones of the third and fourth plurality of conductive vias to define a second three dimensional toroidal coil as shown in Fig. 15.

As per claims 10 and 11 an electrical connection is formed between the first and second three-dimensional conductive toroidal coils as shown in Figs. 16A-16d and an integrated circuit is used to form a complete network as shown in Fig. 25 (see also col. 4, lines 26-55 and col. 5, lines 5-41).

9. Claims 5, 7 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Grader et al.

Grader et al. teach all of the limitations as set forth including a process of stacking a plurality of ceramic layers (as per claim 7) as shown in Fig. 15. However, Grader et al. do not teach the permeability of the toroid shaped core region (such as magnetic tape layer, 1514) to be greater than 1. Even though Grader et al. do not disclose the permeability value of the ceramic material, in manufacturing the transformer or inductor as shown in Fig. 14, it would be obvious the permeability value of the ceramic material of the transformer or inductor to be greater than 1, which is well known in the art. Therefore, since the high and low of the permeabilities of the first and second ceramic powders are used, the permeability of any part of transformer or inductor to be greater than 1 is old and well known and used for manufacturing the transformer or inductor.


Conclusion

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Paul D. Kim whose telephone number is 571-272-4565.

The examiner can normally be reached on Monday-Friday between 7:00 AM to 3:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Peter Vo can be reached on 571-272-4690. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Paul D Kim
Examiner
Art Unit 3729